

19. BIONOMICS OF THE PUMPKIN CATERPILLAR, *MARGARONIA INDICA* SAUND

There are two points I would like to mention in connection with Messrs. Patel and Kulkarny's paper under the above title (1956, *Journ. BNHS.*, 54: 118-27).

Firstly I consider that the figure of the pupa is somewhat misleading as it shows the wing-markings of the pharate imago, which would not be visible until shortly before emergence.

Secondly it may be of interest to record that I have collected many hundreds of examples of this moth at both ordinary and mercury vapour light during the last thirty years or so in both India and East Africa and I have never seen a female. In all the other *Margaronia* species that I have known attracted to light, females are as common as males and very often more so.

MOMBASA,
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20. A NEW PEST OF SCREWPINE IN KERALA, *AGONIA* *FUSCIPES* BALY (HISPINAE, CHRYSOMELIDAE)

(With four figures)

Screw-pines (*Pandanus* spp.) are of considerable economic importance in Kerala. Leaves of these plants are used in making mats, baskets, and fancy articles, a premier cottage industry of the State. The important pests so far recorded on screw-pines are the cetonid *Agestrata orichalcea* L., the pyralid *Acara morosella* Wlk., and the tettigoniid *Sexava nubila* Stall. in Dutch East Indies (Leeffmans, 1927 a, b), the tineid *Aeolarchis sphenotoma* Meyr. and the curculionid *Diathetes pandanae* Zimm. in Fiji (Lever, 1938, Zimmerman, 1939). The only insect recorded on screw-pines in India is *Leptocoris varicornis*, but its relationship with the host plant is not known (Pillai, 1923). *Agonia fuscipes* Baly (Hispinæ, Chrysomelidae) has been recorded for the first time as a pest of screw-pines.

At Vellayani, Kerala, *A. fuscipes* has been observed attacking different varieties of screw-pines all the year round. This appears to be the first time *A. fuscipes* is recorded in India and is of economic importance. The present contribution embodies observations made on the insect.

LIFE-HISTORY AND MORPHOLOGY

Egg (Fig. 1, A, B). The eggs are laid singly, on the undersides of leaves. Unlike those of many other hispidids the eggs of *A. fuscipes* are not sunk into the leaf tissues but are wholly on the leaf surface. The egg is normally situated nearer the base than the tip of the leaf; it lies with its long axis parallel to the midrib. Adhesion of the egg to the leaf surface is strong and lasting; the empty shell remains on the leaf long after the contained egg has hatched. Soon after the egg is laid, the female beetle covers it up with a convex broadly oval

mass of excrementitious matter consisting mostly of partly digested fragments of screwpine leaf tissue, irregularly arranged and stuck together. If the beetle is disturbed while constructing this covering, it moves away never returning to complete the work.

Egg with its covering measures 4×3 mm. The outer covering is easily removed with a needle exposing the egg. Egg proper is oval, flat ventrally being in contact with leaf surface and convex dorsally. Chorion is smooth and light yellowish brown; it flattens out to form a thin flange all round the egg. The flange and ventral surface of egg adhere firmly to leaf, together forming a plane surface. Egg with flange is 3.5×2.5 mm. and egg proper 2×1 mm.

Egg hatches out in 14-16 days in December to January.

Larva (Fig. 1, C). The grub effects its exit from the egg through a slit made in the chorion ventrally and directly cuts its way into the leaf and starts mining. Direction of the mine depends on the orientation of the egg. Initially the mine is about 4 mm. broad, gradually it

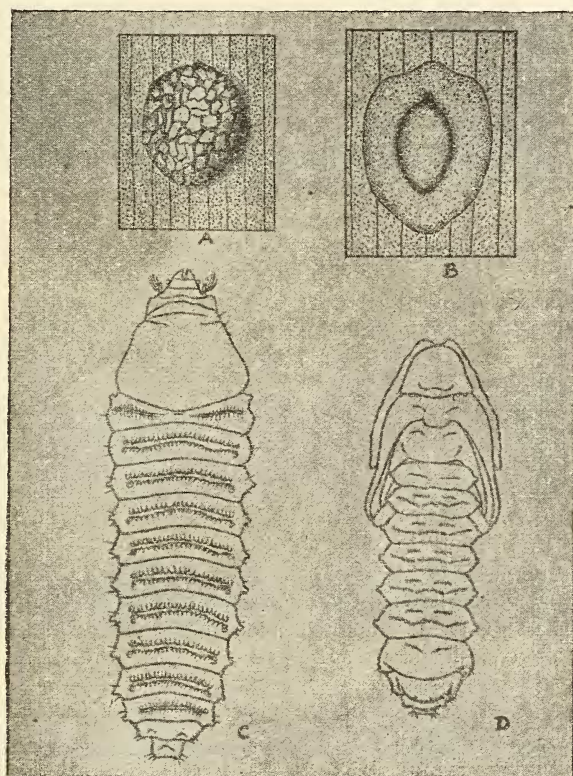


Fig. 1

- (A) Egg with excrementitious covering, (B) Egg with covering removed,
(C) Fullgrown grub, (D) Pupa, dorsal view)

broadens out to 10-15 mm. as the grub grows. Mine constructed by one grub is confined to one side of the midrib. The grub feeds on the

green tissue within the leaf. Inside the mine it is capable of energetic and rapid movements backward and forward. When removed from the mine, the grub is incapable of re-entering a leaf. There are three larval instars. Larval period is 71 days during February to May.

External morphology of the grub is more or less the same in all the instars. Fullgrown grub, 16×4 mm., is elongate, considerably flattened with characteristic form of leaf-miners. It is broadest across the 2nd thoracic segment, narrows slightly and regularly towards the posterior end and steeply towards the anterior end. Flattening is more pronounced at anterior and posterior ends than in the middle. Mouthparts, head between antennae, anterior border of dorsal and ventral prothoracic plates are dark brown in colour; rest of head, antennae, prothoracic plates, light brown and body yellowish. Head, deeply sunk inside prothorax; only mouthparts and antennae protrude; strongly flattened, cranial structure being almost lost. Epicranial halves elongated into lobes imbedded in prothorax. Labrum, maxillae, and labium considerably reduced in structure. Mandibles strong, well-developed, form a cone along epicranial margin. Each mandible with two sharp chitinous blades along inner side enclosing a cavity. Antennae short, three segmented, 2nd segment largest, 3rd smallest; 2nd segment surmounted by one sensory peg and three sense hairs; 3rd segment surmounted by three sense hairs. Body, strongly segmented, with three thoracic and ten abdominal segments. Prothoracic segment largest, roughly triangular; with two similar strongly chitinised, hard but pliable plates, one dorsal and one ventral. Mesothoracic segment, the broadest, constricted in the middle and rounded laterally. Metathorax and first eight abdominal segments similar in form, being broader than long and approximately rounded laterally. 9th segment narrower than 8th and truncated laterally. 10th segment considerably narrower than the 9th, subcylindrical; bears anus ventrally. A chitinised, short, cylindrical, peg-like structure borne on each side of mesothoracic and first eight abdominal segments, it projects sideways and bears the spiracle laterally. This structure and disposition of the spiracles are unique among hispid grubs. A transverse furrow present across first seven abdominal segments, both dorsally and ventrally; each furrow bordered by slight segmented ridges. Only ends of furrow present dorsally and ventrally on mesothorax, present in whole dorsally and only ends ventrally on metathorax and present in whole dorsally and absent ventrally on 8th abdominal segment. These furrows and ridges appear to be useful to the legless grub in movements inside the mine. Skin of grub very minutely wrinkled; all body segments with a few minute hairs laterally.

Pupa (Fig. 1, D). Pupation takes place inside the larval mine. The pupa measures 12×4.5 mm. It is golden-brown in colour; mouthparts antennae and eyes turn dark brown with development. Head, mouthparts, and prothorax resemble those in adult. Among thoracic segments prothorax is largest and mesothorax smallest. Sheaths of antennae, legs, and wings closely apposed to body. Abdomen is strongly segmented with ten segments. First seven segments more or less of similar form and size; each segment is broader than long and rounded laterally. 8th segment smaller than

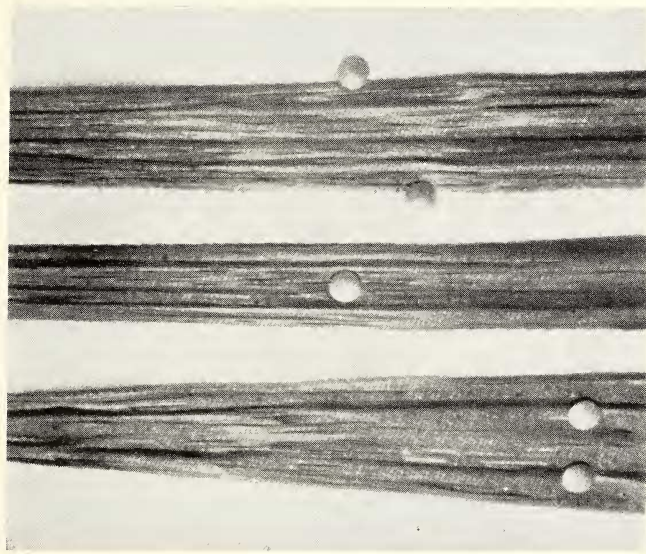


Fig. 2. Screwpine leaves showing feeding-scars made by adult beetles.

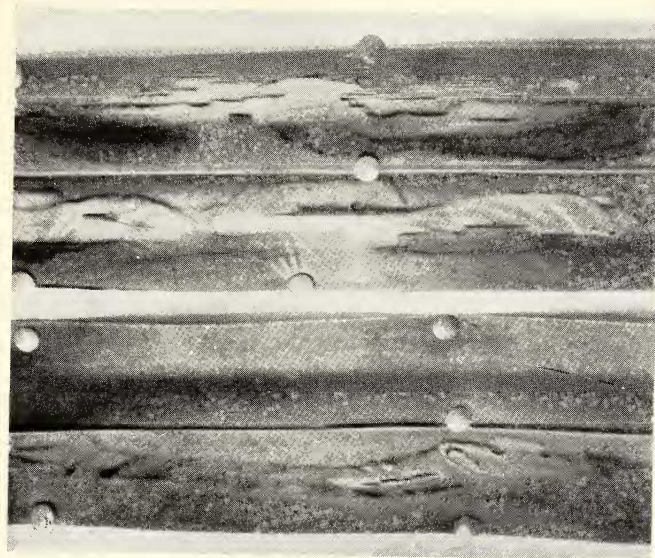


Fig. 3. Screwpine leaf showing larval mines.

(Rounded objects seen in the figures are pins fixing the leaves)

